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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|-----------------------------|---------------------|------------------|
| 10/766,983 | 01/29/2004 | Mirmira Ramarao Dwarakanath | ENP-002 | 4343 |
| 25962 | 7590 | 05/25/2005 | EXAMINER | |
| SLATER & MATSIL, L.L.P. 17950 PRESTON RD, SUITE 1000 DALLAS, TX 75252-5793 | | | RILEY, SHAWN | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2838 | |

DATE MAILED: 05/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/766,983 | Applicant(s) DWARAKANATH ET AL.  | |
| | Examiner Shawn Riley | Art Unit 2838 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5,7-9,12, 14-16 and 20 is/are rejected.
- 7) ☒ Claim(s) 3-5,10,11,13 and 17-19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>aug 2004</u> . | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 2838

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. E.g., Digitally Switched Regulator with Selectable Phase Shifted Clock Reference Signals.

Claim Rejections - 35 U.S.C. § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1-2, 7-9, 14-16, and 20 are rejected under 35 U.S.C. §102(a) as being fully anticipated by Imai et al. (U.S. Patent 6,791,305). Imai et al. shows,¹ (in, e.g., the(ir) figures and corresponding disclosure)

¹ Note claims will be addressed individually and the material in parentheses are the examiner's annotated comments. Further unless needed for clarity reasons, recited limitation(s), will be annotated only upon their first occurrence. Annotated claims begin with the phrase "As to claim". Claims that are not annotated are seen as having already had the invention(s) addressed previously in an annotated claim. Bolded words/phrases indicate rejected material based 112 paragraph rejections. Underlined words/phrases indicate objected to material. For method claims, note that under MPEP 2112.02, the principles of inherency, if a prior art device, in its normal and usual operation, would necessarily perform the method claimed, then the method claimed will be considered to be anticipated by the prior art device. When the prior art device is the same as a device described in the specification for carrying out the claimed method, it can be assumed the device will inherently perform the claimed process. In re King, 801 F.2d 1324, 231 USPQ 136 (Fed. Cir. 1986). Therefore the previous rejections based on the apparatus

Art Unit: 2838

As to claim 1 and method of claim 8 and power converter of claim 15;

A controller for use with a power train of a power converter (use is for controlling timing and in switching regulator) including a switch (12/13) configured to conduct for a duty cycle, comprising: an oscillator (by definition, an oscillator is used to create clock signals) configured to provide a clock signal having multiple phases (multiple phases include CLK1-CLK3, see, e.g., column 4 lines 54-58); and a modulator configured to select a phase of said clock signal as a function of a portion of a digital duty cycle signal (column 4 lines 46-54) to refine a resolution of said duty cycle and provide a signal to control said duty cycle of said switch as a function of said digital duty cycle signal.

As to claim 2 and method of claim 9 and power converter of claim 16;

The controller as recited in Claim 1 wherein said modulator is configured to provide a pulse width modulated signal to control said duty cycle of said switch (the width of the output signal to 12/13 is pulse width modulated by D4 which is in turn width modulated by D3 and D2).

As to claim 7;

The controller as recited in Claim 1 further comprising a duty cycle processor (seen as , e.g., the multiplexer 41 or arithmetic circuit 35) configured to provide said digital duty cycle signal.

will not be repeated.

Art Unit: 2838

As to claim 14;

The method as recited in Claim 8 further comprising furnishing said digital duty cycle signal prior to said act of selecting (the digital signal, as described in claim 1 is produced before another signal is selected).

As to claim 20;

The power converter as recited in Claim 15 wherein said controller further comprises a duty cycle processor (inside of 35, the arithmetic circuit is a duty cycle processor) configured to provide said digital duty cycle signal and said power converter further comprises a driver (this is inherent in 35, note that transistors need to have drivers to operate) configured to provide a drive signal to said switch based on said signal provided by said modulator.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5, 12, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imain et al. (U.S. Patent 6,791,305) as applied above, and further in view of Sher (U.S. Patent 5,689,213). Imain et al show the invention as described above however they do not specifically recite a ring

Art Unit: 2838

oscillator as the means for creating a clock signal. Sher shows in figures 4A-C the use of a ring oscillator to create clock signals. It would have been obvious at the time the invention was made to use a ring oscillator as shown in Sher for the reason of using a ring oscillator that can be programmed after manufacture to get the greatest accuracy out of the device. (see, e.g., column 3 lines 15-34 of Sher).

Allowable Subject Matter

3. Claims 3-4, 6, 10-11, 13 and 17-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. As allowable subject matter has been indicated, applicant's response must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 C.F.R. § 1.111(b) and section 707.07(a) of the M.P.E.P.

5. The following is an examiner's statement of reasons for allowance: No prior art uncovered anticipates or renders obvious applicant(s) claimed power converter and method including: the modulator containing a multiplexer, a counter, at least one flip-flop and a frequency divider.

Further, no prior art uncovered anticipates or renders obvious applicant(s) claimed power converter and method including a digital duty cycle signal which includes least and most significant bits, said modulator being configured to select said phase of said clock signal as a

Art Unit: 2838

function of said least significant bits of said digital duty cycle signal to refine said resolution of said duty cycle.

Further, no prior art uncovered anticipates or renders obvious applicant(s) claimed power converter and method including a digital duty cycle signal includes least and most significant bits, said modulator being configured to provide said signal to control said duty cycle of said switch as a function of said least and most significant bits of said digital duty cycle signal.

Conclusion

Any inquiry from other than the applicant/attorney of record concerning this communication or earlier communications from the Examiner should be directed to the Patent Electronic Business Center (EBC) at 1.866.217.9197. Any inquiry from a member of the press concerning this communication or earlier communications from the Examiner or the application should be directed to the Office of Public Affairs at 703.305.8341. Any inquiry from the applicant or an attorney of record concerning this communication or earlier communications from the Examiner should be directed to Examiner Riley whose telephone number is 571.272.2083. The Examiner can normally be reached Monday through Thursday from 7:30-6:00 p.m. Eastern Standard Time. The Examiner's Supervisor is Mike Sherry who can be reached at 571.272.2084. Any inquiry about a case's location, retrieval of a case, or receipt of an amendment into a case or information regarding sent correspondence to a case **should be directed to 2800's Customer Service Center** at 571.272.2815. Any papers to be sent by fax MUST BE sent to fax number 703.872.9306. Any inquiry of a general nature of this application should be **directed to the Group receptionist** whose telephone number is 571.272.2800. Status information of cases may be found at <http://pair-direct.uspto.gov> wherein unpublished application information is found through private PAIR and published application information is found through public PAIR. Further help on using the PAIR system is available at 1.866.217.9197 (Electronic Business Center).

May 05



Shawn Riley
Primary Examiner